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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/757,330

**Applicant(s)**

MERKLEY ET AL.

**Examiner**

MATTHEW J. DANIELS

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 18-29 and 36-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 18-29 and 36-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date 5/7/08, 6/25/08, 10/17/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 August 2008 has been entered.

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. **Claims 1, 5, 9-11 14, 16, 18-24, 30, 31, and 34** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 18 of U.S.

Patent No. 6777103 in view of Schmidt (CA 1177205). **As to Claim 1**, The '103 patent provides the claimed steps of providing cellulose fibers (18:3), treating at least a portion of the cellulose fibers with a sizing agent (the chemical is interpreted to be a sizing agent, 18:4-5), mixing the sized fibers with a cementitious binder (18:9-11) and aggregates or additives (18:49-57), forming (18:12-13), and curing (18:14-15). The '103 patent claims a chemical that inhibits microorganism growth into the fibers (18:5-6), but is silent to the limitation in the instant application claims that the treatment is performed in water or solvent to bond to the fibers and make the fibers hydrophobic. However, this aspect of the invention would have been obvious over Schmidt, who teaches treatment of fibers in water or a solvent (page 2, lines 3-15 and elsewhere), which would bond with hydrophilic sites in the cellulose and make the surface hydrophobic (page 2, line 3). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into the '103 patent because the '103 patent requires a chemical which would inhibit microorganism grown into the fibers, and by impregnating the fibers (Schmidt, page 1, line 2) with a metal aluminate and hydrophobizing chemical (page 1, lines 25-32), the process of Schmidt would inhibit growth of microorganisms into the fibers which require water for growth or survival. **As to Claim 5**, the process of the '103 patent is not claimed as performed under elevated pressure, and therefore when it was performed without pressurization, it would be performed at 1 atm. **As to Claim 9**, the process of the '103 patent is claimed to be performed at 1-6% consistency in a hydropulper (18:38-40). **As to Claims 10 and 11**, the '103 patent teaches the same or substantially the same CSF range (18:41-48). **As to Claim 14**, the '103 patent teaches the sized cellulose fibers mixed with unsized cellulose fibers (18:7). **As to Claim 16**, the '103 patent requires cement (18:10), an

aggregate (18:51), density modifiers (18:57), and additives (18:54). **As to Claim 18**, the process of the '103 patent requires precuring and curing (19:2). **As to Claims 19-23**, the '103 patent provides identical or substantially identical claimed subject matter at 19:1-19). **As to Claim 24**, the '103 patent provides individualized fibers (18:3). **As to Claim 30**, the '103 patent provides a method of manufacturing a building material incorporating reinforcing fibers (18:1-15) comprising chemically treating at least a portion of the reinforcing fibers to improve the fiber's resistance to microorganism growth (18:5-6), which is a type of environmental degradation, wherein the fibers are individualized (18:3), mixing the reinforcing fibers with a hydraulic binder to form a mixture (18:9-11), forming (18:10-13), and curing (18:14). The '103 patent is silent to treatment in a solution. However, Schmidt teaches treatment of fibers in water or a solvent solution (page 2, lines 3-15 and elsewhere), which would bond with hydrophilic sites in the cellulose and make the surface hydrophobic (page 2, line 3). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into the '103 patent because the '103 patent requires a chemical which would inhibit microorganism grown into the fibers, and by impregnating the fibers (Schmidt, page 1, line 2) with a metal aluminate and hydrophobizing chemical (page 1, lines 25-32), the process of Schmidt would inhibit growth of microorganisms into the fibers which require water for growth or survival. **As to Claim 31**, the fibers are individualized in the '103 patent (18:22). **As to Claim 34**, in the '103 patent in view of Schmidt teaches a reaction occurring (Schmidt, see the entire hydrophobizing process).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 43-46** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. **As to Claim 43**, a text search of the published application revealed that there is no disclosure of 30 C or 45 C, 30-45% cementitious binder, 38-60% ground silica, and it is unclear if there is support for the 6 to 8 hours. **As to Claim 44**, there appears to be no support for the claimed times. **As to Claim 45**, there is no support for the claimed temperatures. **As to Claim 46**, there is no support for the claimed drying times and the oven is not disclosed as being used for curing.
4. **Claims 44-46** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. **As to Claims 44-46**, it is unclear if the claimed conditions are intended to supplement the curing conditions already claimed in Claim 43, or whether the claimed conditions inadvertently contradict the new curing conditions recited in Claim 43.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-7, 15, 16, 18-27, 29, 36, and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205). **As to Claim 1**, Naji teaches a method of manufacturing a fiber reinforced cement composite material, comprising:

providing cellulose fibers (page 3, lines 7-16);

mixing the fibers with a cementitious binder and at least one additive (for example, colorants, page 3, line 19) to form a fiber cement mixture (page 3, line 25);

forming the fiber cement mixture into a fiber cement article of a pre-selected shape and size (page 3, line 30); and

curing the fiber cement article so as to form the fiber reinforced composite building material (page 4, lines 3-5).

Naji is silent to: treating at least a portion of the cellulose fibers with a sizing agent in the presence of water or an organic solvent, wherein the sizing agent comprises a hydrophilic functional group and a hydrophobic functional group, wherein the hydrophilic group chemically bonds to at least some of the hydrophilic sites on inner and outer surfaces of the fibers to form

sized fibers, wherein the sizing agent substantially blocks the hydrophilic sites, thereby reducing the fibers' affinity toward water.

However, Schmidt teaches treating the cellulose fibers with a sizing agent of alkylsilanol (page 2, line 28), the alkylsilanol providing a hydrophobic surface (page 1, lines 21-24). Because the treatment of Schmidt appears to bond with the cellulose and present a hydrophobic surface, it is submitted that it has the claimed hydrophobic and hydrophilic groups.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into that of Naji because Naji suggests a "water-proofing" agent (page 3, line 21) and that a reduction in water permeability and hygroscopic moisture movement is desirable (page 4, lines 15-17) and Schmidt provides a treatment which is considered to be a water proofing treatment and would lead to a reduction in water permeability and hygroscopic movement. **As to Claim 2**, Schmidt treats the fibers in a solution containing sizing agents (page 4, line 28). **As to Claim 3**, Schmidt teaches that the concentration of the sizing agent may be varied (page 3, lines 20-30) to produce "maximum effect" (page 1, lines 21-24), the effect being that of hydrophobizing. Thus, the amount of sizing agent represents a result-effective variable that would be adjusted, the concentration being preferably "low" (page 1, line 23), which is suggestive of concentrations less than 50%. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of sizing and arrive at the claimed conditions in order to maximize the hydrophobizing effect. **As to Claims 4 and 5**, it is submitted that in view of the teachings in Example 6 of Schmidt (pages 6-7) and the table therein, that a reaction time of about ½ to 1 hour at 1 atmosphere (normal atmosphere) would have been obvious. **As to Claim 6**, Schmidt teaches



that the cellulose material is “immersed” (page 2, line 4), which would suggest that the amount of fibers is less than that of the solution, suggesting the claimed range. **As to Claim 7**, Schmidt teaches that as an alternative to immersion, the sizing may be sprayed onto the cellulose (page 2, lines 3-10). **As to Claim 15**, Naji suggests a mixture of cellulose with inorganic and synthetic fibers (pages 3, lines 7-12). **As to Claim 16**, Naji teaches cementitious binder, density modifiers and additives (page 3, lines 7-25), and any of the components listed on pages 2-3 may be interpreted to be an aggregate, such as the pigments, colorants, or fillers. Schmidt provides the sized fibers. **As to Claims 18-23**, Naji teaches precuring and curing (page 4, lines 3-4), the precuring occurring for less than 80 hours without heating (page 4, lines 3-4), the curing performed in an autoclave in a pressurized vessel for 3 to 30 hours at a temperature of 120 to 200 C (page 4, lines 4-6). **As to Claim 24**, it is submitted that because the fibers have the claimed CSF value (compare Naji, page 3, lines 15-16 and instant Claims 10 and 11), they are implicitly individualized. **As to Claims 25-27**, these limitations are drawn to a particular order or difference in the order of process steps disclosed in the prior art, which is generally unpatentable in the absence of unexpected results because selection of any order of mixing ingredients is prima facie obvious. *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Here the case is sufficiently similar to *Gibson* because that case is also directed to a difference in the order of mixing ingredients (such as linseed oil, which may be considered a sizing agent) with fibers, which was found to be unpatentable. Additionally, in this case Schmidt teaches that the hydrophobizing treatment operates equally well when applied to cellulosic fibers (which are therefore individualized) or wood (page 2, lines 20-27), thus suggesting that an unexpected result is not to be found. **As to Claim 29**, Schmidt teaches that the fibers are treated in a sizing agent

Art Unit: 1791

solution (page 1, lines 21-30) and dried (page 2, line 5). Because Naji teaches fibers having a particular CSF value, it would have been obvious to size the fibers, dry, and then incorporate the fibers into the mixture of Naji.

**As to Claim 36**, Naji teaches a method of manufacturing a fiber reinforced cement composite material, comprising:

providing cellulose fibers (page 3, lines 7-16);

mixing the fibers with a cementitious binder and at least one additive (for example, colorants, page 3, line 19) to form a fiber cement mixture (page 3, line 25);

forming the fiber cement mixture into a fiber cement article of a pre-selected shape and size (page 3, line 30); and

curing the fiber cement article so as to form the fiber reinforced composite building material (page 4, lines 3-5).

Naji is silent to: treating at least a portion of the cellulose fibers in solution with about 0.01 to 50% by fiber mass with one or more sizing agents in the presence of water or an organic solvent for 1 to 28 hours, wherein the sizing agent comprises a hydrophilic functional group and a hydrophobic functional group, wherein the hydrophilic group chemically bonds to at least some of the hydrophilic sites on inner and outer surfaces of the fibers to form sized fibers, wherein the sizing agent substantially blocks the hydrophilic sites, thereby reducing the fibers' affinity toward water.

However, Schmidt teaches treating the cellulose fibers with a sizing agent of alkylsilanol (page 2, line 28), the alkylsilanol providing a hydrophobic surface (page 1, lines 21-24).

Because the treatment of Schmidt appears to bond with the cellulose and present a hydrophobic

surface, it is submitted that it has the claimed hydrophobic and hydrophilic groups. It is submitted that in view of the teachings in Example 6 of Schmidt (pages 6-7) and the table therein, that a reaction time of about  $\frac{1}{2}$  to 1 hour at 1 atmosphere (normal atmosphere) would have been obvious. Additionally, Schmidt teaches that the concentration of the sizing agent may be varied (page 3, lines 20-30) to produce "maximum effect" (page 1, lines 21-24), the effect being that of hydrophobizing. Thus, the amount of sizing agent represents a result-effective variable that would be adjusted, the concentration being preferably "low" (page 1, line 23), which is suggestive of concentrations less than 50%. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of sizing and arrive at the claimed conditions in order to maximize the hydrophobizing effect. Additionally, Schmidt teaches that the cellulose material is "immersed" (page 2, line 4), which would suggest that the amount of fibers is less than that of the solution, suggesting the claimed range.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into that of Naji because Naji suggests a "water-proofing" agent (page 3, line 21) and that a reduction in water permeability and hygroscopic moisture movement is desirable (page 4, lines 15-17) and Schmidt provides a treatment which is considered to be a water proofing treatment and would lead to a reduction in water permeability and hygroscopic movement.

**As to Claim 37**, Schmidt teaches that the concentration of the sizing agent may be varied (page 3, lines 20-30) to produce "maximum effect" (page 1, lines 21-24), the effect being that of hydrophobizing. Thus, the amount of sizing agent represents a result-effective variable that would be adjusted, the concentration being preferably "low" (page 1, line 23), which is

suggestive of concentrations less than 50%. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of sizing and arrive at the claimed conditions in order to maximize the hydrophobizing effect. **As to Claim 42**, in the process of Naji, the other additives or density modifiers may be amorphous silica or foaming agents (page 3, line 19-21), which would not comprise metakaolin.

6. **Claims 8-11, 38-41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of McReynolds (USPN 4225383). Naji and Schmidt teach the subject matter of Claims 1 and 36 above under 35 USC 103(a). **As to Claims 8, 9, 38, and 39**, Naji is silent to the claimed limitations, although it is noted that Naji requires a particular CSF value (page 3, lines 15-16). McReynolds teaches a 4% consistency of fiber in a hydropulper (21:43-45), which is interpreted to be a dispersing and fibrillating process. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of McReynolds into that of Naji because Naji suggests a CSF encompassing a value of 500, and McReynolds teaches hydropulping at 4% consistency is useful for achieving a CSF of 500 (21:43-50). **As to Claims 10, 11, 40, and 41**, Naji suggests that the fibers should be fibrillated to 200-500 CSF (page 3, lines 15-16).

7. **Claims 12 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of Battista (USPN 3400181) and Holbek (WO 84/04765, of record). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claims 12 and 13**, Naji is silent to the claimed

limitations. However, Schmidt teaches drying of sized cellulose fibers (page 2, line 5).

However, Schmidt is also silent to the claimed method to the claimed moisture content.

However, Battista teaches that it is known to mix water and/or alcohol (4:18-23) with cellulose (3:35) and to subsequently spray dry or freeze dry the mixture (3:10-20), which is interpreted to be flash drying. Although silent to a particular resulting moisture level, Holbek teaches that cellulose fiber has an equilibrium water content of 7% (page 1, lines 30-32). Thus, Schmidt teaches that it is desirable to dry hydrophobized fibers after treating them in an aqueous or aqueous/alcoholic solution (page 1, line 27), Battista provides a rapid and efficient process for drying cellulose fibers in water and/or alcohol, and Holbeck teaches that the equilibrium moisture content of cellulose is 7% (and within the claimed range of 5%-50%). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the methods of Battista and Holbek into that of Naji and Schmidt because dry fibers would have better dispersibility in cement and because Schmidt suggests drying, and because the drying process of Battista would provide an efficient drying process for large quantities of cellulose fibers, and because drying to the equilibrium moisture content (an no lower) would save money by avoiding unnecessary heating.

8. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of Randall (USPN 1914163). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 14**, Naji is silent to a mixture of sized an unsized fibers. However, Randall teaches mixing sized fibers with unsized fibers (page 2, right col, lines 109-115). It would have been prima facie

obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Randall into that of Naji in order to aid in dispersing the sizing material, reduce the quantity of sizing material used, or because cellulose fibers with a low water absorption (such as the hardwood fibers of Naji, page 3, line 9) would not require sizing.

9. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of Hoskins (WO 99/35330). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 28**, Naji is silent to the hammermilling, but clearly teaches cellulose fibers (See the rejection of Claim 1) which would have been comminuted in some manner. However, Hoskins teaches that comminution of pulp is conventionally accomplished using many processes “well know to those skilled in the art” (page 14, line 19), including including, in particular, hammermilling (page 14, line 20). Other methods recited on page 19 may be considered to be shredding process. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Hoskins into that of Naji because Naji suggests cellulose “fibers” which must have been comminuted, and Hoskins teaches that hammermilling is a desirable and well known comminution process.

10. **Claims 43-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205) and Nakano (US 4,655,979). **As to Claim 43**, Naji teaches a method of manufacturing a fiber reinforced cement composite material, comprising:  
providing cellulose fibers (page 3, lines 7-16);

mixing the fibers with 30-45% cementitious binder (page 7, formulations 7-10), 38-60% silica (page 7, formulations 7-10), and at least one additive (for example, colorants, page 3, line 19) to form a fiber cement mixture (page 3, line 25);

forming the fiber cement mixture into a fiber cement article of a pre-selected shape and size (page 3, line 30); and

curing the fiber cement article so as to form the fiber reinforced composite building material (page 4, lines 3-5).

Naji is silent to: treating at least a portion of the cellulose fibers in solution with about 5-10% by fiber mass with one or more sizing agents in the presence of water or an organic solvent for 1 to 28 hours, wherein the sizing agent comprises a hydrophilic functional group and a hydrophobic functional group, wherein the hydrophilic group chemically bonds to at least some of the hydrophilic sites on inner and outer surfaces of the fibers to form sized fibers, wherein the sizing agent substantially blocks the hydrophilic sites, thereby reducing the fibers' affinity toward water, and wherein the curing is performed for about 6 to 8 hours at 30 to 45 C.

However, Schmidt teaches treating the cellulose fibers with a sizing agent of alkylsilanol (page 2, line 28), the alkylsilanol providing a hydrophobic surface (page 1, lines 21-24). Because the treatment of Schmidt appears to bond with the cellulose and present a hydrophobic surface, it is submitted that it has the claimed hydrophobic and hydrophilic groups. It is submitted that in view of the teachings in the examples of Schmidt (pages 6-7) and the table therein, that a reaction time of about 1-12 hours (dried overnight after contacting solution) would have been obvious. Additionally, Schmidt teaches that the concentration of the sizing agent may be varied (page 3, lines 20-30) to produce "maximum effect" (page 1, lines 21-24), the effect

being that of hydrophobizing. Thus, the amount of sizing agent represents a result-effective variable that would be adjusted, the concentration being preferably “low” (page 1, line23), which is suggestive of concentrations within the claimed range. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of sizing and arrive at the claimed conditions in order to maximize the hydrophobizing effect. Additionally, Schmidt teaches that the cellulose material is “immersed” (page 2, line 4), which would suggest that the amount of fibers is less than that of the solution, suggesting the claimed range.

Nakano teaches that it is known to cure (or precure) a cement article for about 6 hours at a temperature of about 35-40 C (Figure, “precuring time”).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the methods of Schmidt and Nakano into that of Naji because (a) Naji suggests a “water-proofing” agent (page 3, line 21) and that a reduction in water permeability and hygroscopic moisture movement is desirable (page 4, lines 15-17) and Schmidt provides a treatment which is considered to be a water proofing treatment and would lead to a reduction in water permeability and hygroscopic movement, and (b) Nakano suggests that precuring of concrete before autoclave curing is conventional and teaches that the greater part of the initial hardness depends upon the hydration of the slurry in a warm wet state (5:60-6:33), and one would have found it obvious to incorporate this precuring of Nakano prior to autoclave curing in order to develop the strength of the article and in view of its conventional use in the art prior to autoclave curing of a cement part.



**As to Claims 44 and 45**, Naji teaches autoclaving for 24 hours (page 4, line 6) at a temperature of about 120 C to 200 C (page 4, line 6), encompassing the claimed range. **As to Claim 46**, Nakano also teaches allowing the cement to sit for 20 minutes for longer after pouring (5:48) to develop initial strength in addition to precuring (5:60-6:33). In view of Nakano's suggestion that heating improves initial strength, it would have been also obvious to provide the same heating during the initial strength development (5:46-53). Any device which heats to this level would be interpreted to be an oven.

***Response to Arguments***

11. Applicant's arguments filed 5 August 2008 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:

- a) One of ordinary skill having knowledge of the Smith patent would conclude that an alkalia metal aluminate was required for creating a hydrophobizing effect. Only a mixture of these two components possess an impregnating effect. One would no doubt be discouraged from treating individualized fibers with a sizing agent comprising a hydrophilic functional group and a hydrophobic functional group. One would not expect a reasonable likelihood of success absent the addition of the alkali metal aluminate.
- b) None of the additional references overcome the deficiencies of the Naji/Schmidt combination.
- c) New Claims 36 and 43 are independent.

12. These arguments are not persuasive for the following reasons:

a) As stated previously, the Examiner's position will be that a creating a hydrophobic surface would be an obvious method for inhibiting microorganism growth on the surface of cellulose fibers. Schmidt provides a known method of achieving this objective. Note that Schmidt teaches, for example, an alkylsilanol at page 4, lines 2 and 6, which appears to be the same or substantially the same as the sizing agent used in this application.

Applicant's arguments appear to assert that because the instant claims do not recite the same aluminate as allegedly required by Schmidt, that the instant claims are therefore not obvious over a method which produces a hydrophobic effect while also using an aluminate. However, the transitional term "comprising", as used in the instant claims, is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Mars Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1376, 71 USPQ2d 1837, 1843 (Fed. Cir. 2004) ("like the term comprising,' the terms containing' and mixture' are open-ended."); *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1368, 66 USPQ2d 1631, 1634 (Fed. Cir. 2003) ("The transition comprising' in a method claim indicates that the claim is open-ended and allows for additional steps."); *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) ("comprising" leaves "the claim open for the inclusion of unspecified ingredients even in major amounts").

Since the argument is drawn to an additional component found in the prior art but asserted to be absent from the claimed invention in a claim including the transitional phrase “comprising”, it is asserted that the argument is not commensurate with the scope of the claim. If exclusion of any or all unrecited chemicals or ingredients is desired, a different transitional phrase may be used to narrow the scope of the claim.

b,c) The additional references are pertinent for the teachings cited above, and Claims 36 and 43 appear to recite particular process conditions which are disclosed By the prior art or appear to represent result-effective variables which the ordinary artisan would have optimized to arrive at the claimed conditions.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Matthew J. Daniels/  
Primary Examiner, Art Unit 1791  
10/14/08